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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 07 1993

OFFICE OF
AIR AND RADIATION

Richard A. Meserve
Covington & Burling
1201 Pennsylvania Ave., NW
Washington, DC 20044

Dear Mr. Meserve:

Thank you for your letter of October 22,1993, regarding the cleanup criteria under consideration for the Kerr-McGee/West Chicago (Residential Properties) NPL sites. In your letter, you comment that "the national debate over radium cleanup standards is largely irrelevant in the circumstances that are presented by the West Chicago sites." Your assumption, that the Office of Radiation and Indoor Air (ORIA) has failed to appreciate that the radium isotope of concern at these sites is Ra-228 (part of the Th-232 decay chain), is not the case.

The critical distinction that you make between Ra-228 and Ra-226 at equal concentrations in soil is the lower concentration and risk associated with thoron (or Rn-220, a Ra-228 decay product) when compared with radon (or Rn-222, a Ra-226 decay product). In fact, EPA's mill tailing standards for Ra-226 and Th-232, published in 40 CFR 192, require equal levels of cleanup of soils contaminated with either isotope.

When 40 CFR 192 was promulgated, the 5 pCi/g limit for thorium or radium in surface soils was based on both the inhalation risk from radon and thoron and the outdoor risk from external gamma radiation. Since the Th-232 decay chain contributes approximately 50% more effective dose equivalent from gamma radiation than the Ra-226 decay chain (at equal concentrations of Th-232 and Ra-226 in secular equilibrium with their decay products), thorium-contaminated soils actually pose a higher risk from gamma than do radium-contaminated soils.

As stated in the preamble to the rule, the 5 pCi/g limit in 40 CFR 192 is a health based standard. The 15 pCi/g limit in subsurface soils is not a health based limit, but is rather a practical "finding tool" that assures cleanup to below 5 pCi/g at

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all depths for discrete areas of buried tailings. Since buried tailings exist at levels well above 15 pCi/g and typically show little admixture with surrounding soil, the 15 pCi/g subsurface criterion allows for determination of the boundaries of a contaminated zone using hand-held gamma survey instruments. Thus, the expectation in 40 CFR 192 is that all of the contaminated subsurface soils at uranium and thorium mill tailing sites will be detected and removed and that any residual contamination will generally be well below 5 pCi/g. Post-remedial sampling at these sites has confirmed this assumption.

If you need additional information on this subject, please contact Rebecca Frey, the remedial project manager for the site, at (312) 886-4760.

Sincerely,

/S/

Margo T. Oge
Director, Office of Radiation
and Indoor Air

cc: Eugene Durman (6603-J)
Rebecca Frey, Region 5
Larry Jensen, Region 5
William Muno, Region 5